

Astonishing Things About Teeth

Who Would Ever Guess That Crabs Wear Their Teeth on Their Legs, That the Little Sea Urchin Has Five Jaws with Teeth, While the Big Elephant Uses Only Four Teeth, and Lobsters Carry Around a Complete Set of Knives, Forks, Saws, Nut Crackers, Toothpicks, and Even a Comb and Brush, and the Whale with Excellent Teeth Never Bites On Them

EVEN the wise people in the great American Museum of Natural History in New York did not dream that there were so many strange kinds of teeth until they began to assemble specimens of every discoverable sort of tooth to be found in living creatures all over the world.

It turns out that mankind has a very modest dental outfit compared with many animals and fishes. Even the little sea-urchins have five jaws with teeth that keep on growing as long as the creature lives. The horseshoe crab wears his teeth on his legs. The lobster carries a complete set of knives, forks, saws, grinders and nutcrackers, and even worms have teeth.

Nothing in the exhibit is perhaps more unexpected than the chewing outfit of the elephant. This huge animal does all his chewing on two teeth, but he has a long row of teeth in reserve behind the ones which he grinds on. As the two front teeth wear down this continuous line of teeth moves forward in the jaw, and as fast as the front teeth are worn away a new tooth comes forward to take the place of the worn-out ones.

The following, in regard to the new exhibit of teeth at the American Museum of Natural History, was prepared by Professor George M. Pindar, of the museum: Many kinds of teeth are shown in the exhibit, from the curious, complicated apparatus called the "Aristotle's lantern" in vogue among the sea-urchins, to the great, cruel fang of the lion. The "Aristotle's lantern" of the sea-urchin consists of five pyramidal jaws, each carrying a long, slender tooth of continuous growth, which moves forward in the jaws as it becomes worn away at the point.

The horseshoe or king crab wears his teeth on his legs, at the first joints of which is a series of spines and sharp points. The food is torn to bits on these teeth and worked into the mouth opening. The lobster does his Fletcherizing with teeth which are to be found on his fourth to ninth appendages. Some of these teeth

are adapted to seizing the food, others to grinding it, etc. The exhibit also reveals the little-known fact that the beetle and worm boast teeth as useful and efficient as any.

Of course, there are teeth of many kinds. But the typical tooth of a vertebrate or backboneed animal, as shown in cross-section, consists of pulp contained in a cavity, which by deposition of lime in its exterior portion becomes dentine, ivory or bone, forming the body of the tooth; enamel, overlying the dentine on the crown of the tooth, and cement, usually surrounding the base of the tooth and sometimes covering part or all of the enamel of the crown. The teeth of some animals, however (the sperm whale, for example), have no enamel whatsoever.

In man, as in most mammals, the teeth are set in distinct, separate sockets, called by the initiated "alveola," and are separated by a membrane from the surrounding bone. But nature has other ways of implanting teeth. The extinct sea reptile known to the scientist as Ichthyosaurus had his teeth planted in a continuous shallow groove, as was the habit with certain birds which lived many centuries ago.

Modern birds, however, have adopted the fashion of going toothless. Another sort of attachment of the teeth is by means of a bony union of the outer side of the teeth with the inner side of the jaw. In a fourth case the base of the tooth is completely fused with the side of the jaw. It is another evidence of a beneficial nature that man, the only creature who is given to having his teeth extracted, does not have his teeth implanted in this last way.

Some animals have the advantage of teeth which are more or less movable, due to the fact that they are attached to the jaws by ligaments. This is the case with many fishes and some reptiles; with snakes this arrangement facilitates the swallowing of the food.

Some animals, less fortunate than man, have one set of teeth, which are

expected to last them through an entire lifetime. Most mammals, like man, have two sets—a temporary or milk set and a permanent set. No mammal has more than two sets of teeth. Generally a tooth is replaced by the formation below it of another tooth. As the new tooth increases in size the roots of the old one are absorbed, until finally it falls out and gives place to the new.

The shark is not worried by the fear of a toothless old age, for he has several rows of teeth, one behind the other, and as fast as the teeth in the outer row are lost they are replaced by those just back of them. Replacement may be accomplished by the formation of a new tooth beside the old one, which is absorbed at the point of contact until the developing tooth enters the base and replaces it. That is the way crocodiles and lizards do it. Or teeth may be formed at the back of the series, these moving forward to take the place of those worn away.

The teeth of the elephant are developed at the back of the jaw, and the entire row moves slowly forward, the front part of each tooth coming into use first and wearing away as it is pushed forward. While six teeth are developed on each side of either jaw, not more than parts of two teeth are in use at any one time.

Then teeth, according to their make-up, vary in growth. Some teeth grow for only a limited time. Others, more energetic, continue to grow throughout lifetime. In the first case, the interior cavity occupied by the pulp fills up and growth ceases. In the latter instant, the pulp cavity remains open, the tooth is continually pushed outward, and layer after layer of dentine forms at the base. The continuous growth of some teeth is illustrated in this interesting exhibit by a section of an elephant's tusk containing a wrought-iron bullet. The bullet was fired into the hollow base of the young tusk, and the continual formation of dentine resulted in embedding the bullet in solid ivory.

Not all animals wear their teeth in their mouths. As has been said, some are partial to the location of their teeth on their

The Full Table and Toilet Set Which the Lobster Carries Around with Him.

The lobster has a most remarkable outfit supplied by nature for securing food and enjoying his dinner. He has great claws for crushing and grinding, a pair of eyes which are stuck out on the end of movable pins, and his nose is on the end of two long feelers which he can switch around over his back and smell whatever is behind him. He carries, among other regular equipment, a brush and comb for keeping his face, mouth and feet clean.

legs, while others consider the stomach the ideal situation. And even among those animals who consider that the tooth's sphere is the mouth, there are differences of opinion as to just where teeth can be worn with propriety.

The frog grows teeth only on his upper jaw. The animal known as Hoffman's sloth has teeth only on the hinder parts

Teeth Are Developed at the Back of the Jaw and the Entire Row of Teeth Moves Slowly Forward, the Front Part of Each Tooth Coming Into Use First and Wearing Away as It Is Pushed Forward, While Six Teeth Stand Ready on Each Side of Either Jaw. Not More Than Parts of Two Teeth Are in Use at any One Time.

of both jaws. The gazelle's teeth are permitted to grow on both jaws, with the exception of the front of the upper jaw.

Of course, the form and arrangement of the teeth of various animals differ to meet the various circumstances. The teeth (or saw) of the sawfish, far removed from the mouth, are designed for wounding or killing the prey. The teeth of the python are made for seizing and grasping, and are long and recurved, so as to hold the prey while the gullet is worked over it. The teeth of the ray, which feeds on shellfish, are adapted to crushing. The lion's teeth are shaped for rending and killing. His posterior teeth act as scissors.

The teeth of the beaver are long, sharp and chisel-shaped—requisite tools for his life's work of gnawing. The fangs or front teeth of the poisonous snake are really tubes, which serve as hypodermic syringes to inject the poison. An opening at the base of the fang connects with the poison sac. Reserve fangs back of the ones in use soon replace those lost, so that removing the fangs of a snake renders him only temporarily harmless.

The elephant grinds his food between teeth whose roughened surfaces act like millstones. The whale strains or sifts the water with which he fills his mouth by ejecting it through his teeth—sieves formed by plates of baleen. In this way he retains in his mouth, on the inner, hairy surface, the small animals left by the receding water.

But of all creatures the lobster is the most richly endowed with natural tools for enjoying his dinner, and, incidentally, because of its heavy armor is at greater advantage in defending itself from attack.

Great claws, feelers, smelling antennae, feet and

The Long Mouth of the Dolphin. It Makes Very Little Difference to Him If He Loses a Few Dozen Teeth.

tail segment, are but a few of the highly specialized instruments with which these crustaceans are provided to secure the "fat of the sea." He also carries a brush and comb to keep his nose, face and feet clean.

Although a great swimmer, the lobster is equally fond of prowling along the bottom of the sea, and is particularly well outfitted for this. Aside from the first great claws, they have four pairs of ambulatory legs. The first two pairs of these are "chelate" or clawed, and serve both in walking and eating.

The last two pairs are non-chelate. The last pair next to the tail serve as picks, and in conjunction with the last tail segment, the telson, which is used as a shovel, the lobster has an admirable digging apparatus to bore his shelter hole in the mud. The latter picks are also covered with fine hairs and are used as brushes to clean the swimmerets.

There are five pairs of swimmerets, a pair to each segment, between the telson and the last set of legs or picks. These are small, fanlike appendages, and propel the lobster through the water at a surprising rate of speed.

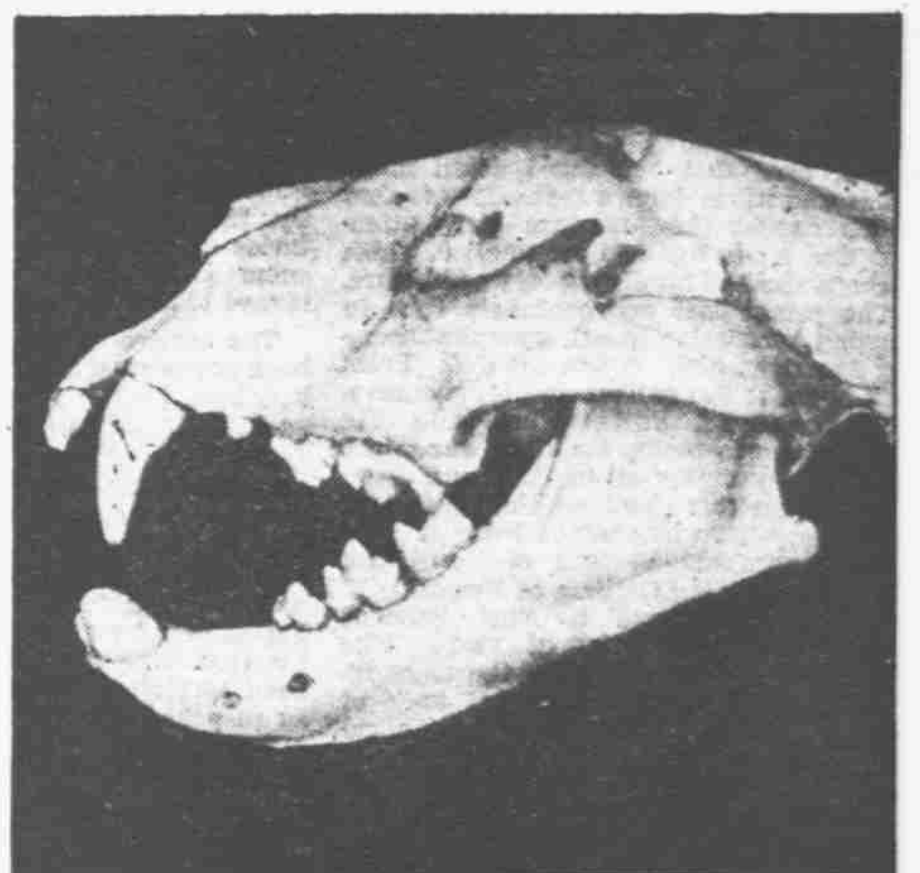
The two great claws or chelipeds do not serve any purpose in walking except in the earlier stages of development. The mature lobster uses these exclusively for defense and in crushing his prey.

The right claw in the photograph may be seen to be the more powerful. The teeth are larger and the claw thicker. This is called the crushing or knobbed claw, and is brought into play for cracking a hard-shelled clam or any other tough-shelled mollusk encountered. The left or cutting claw is used in holding the object and for tearing and rending the food. Both claws can carry food to the mouth or gastric mill.

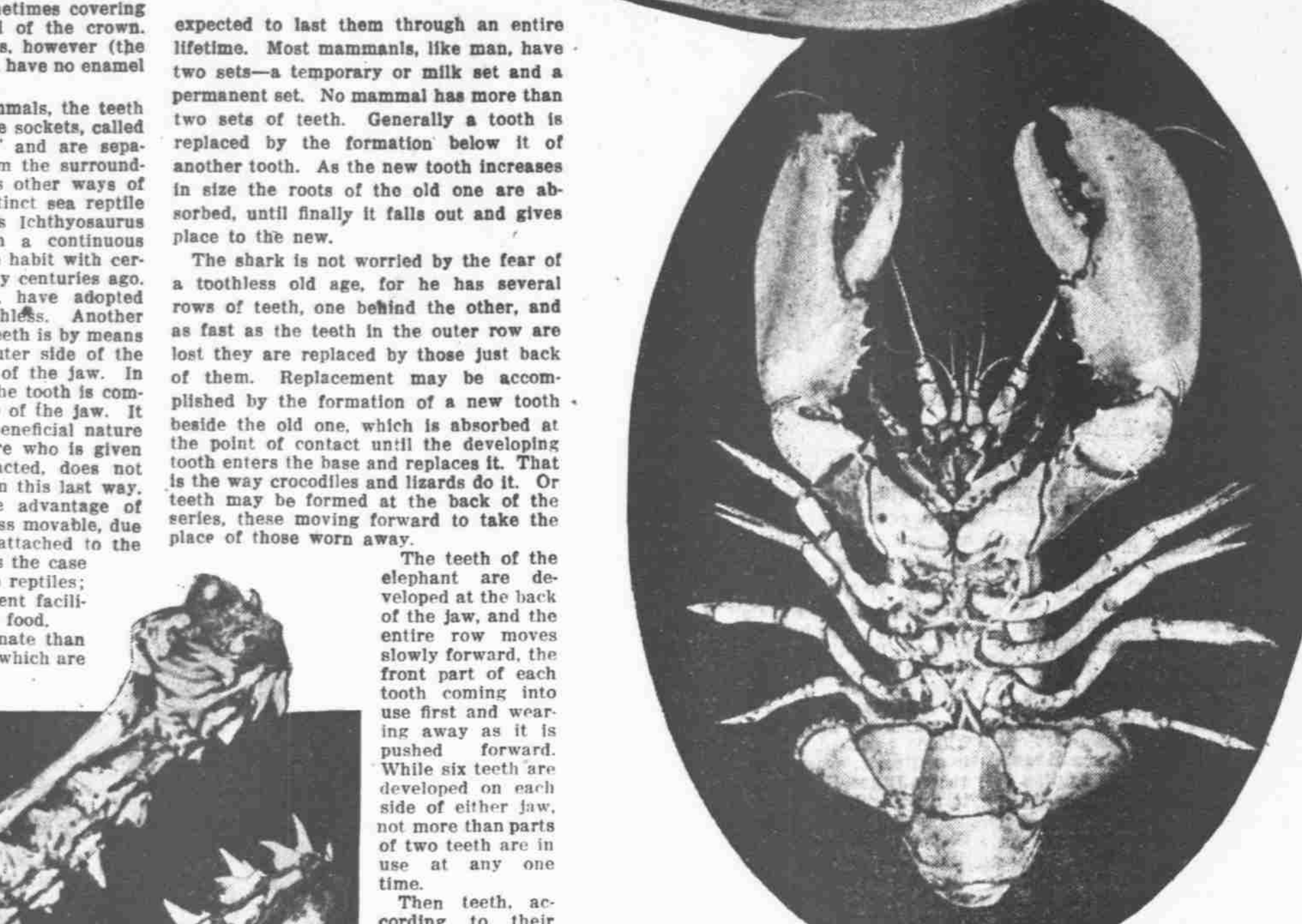
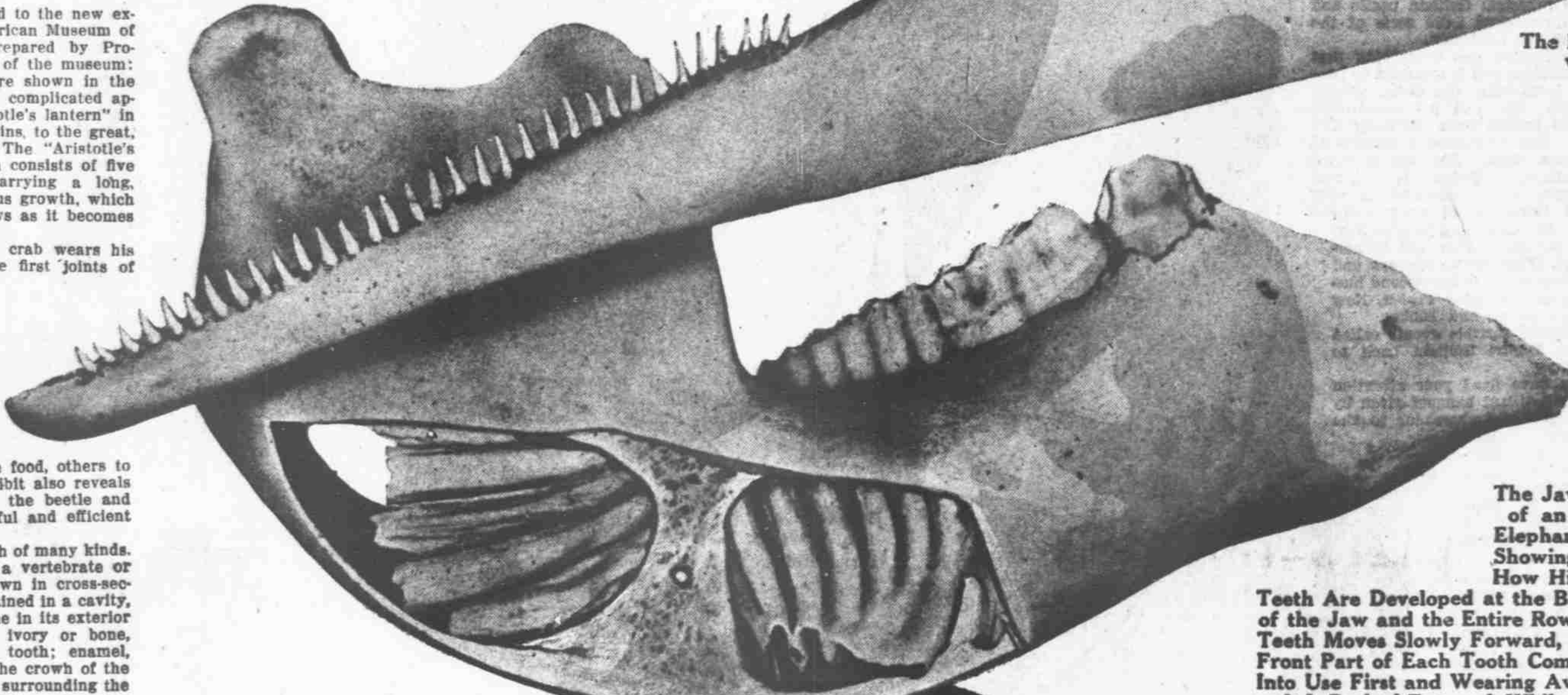
The details of the mouth parts cannot be seen clearly in the photograph, with the exception of the third pair of maxillipeds. These are the most interesting, in that they reveal that the lobster is somewhat of a Beau Brummel. Here is located the lobster's brush and comb. There is a comb on the interior edge of these maxillipeds covered with fine hairs. This is used chiefly when his long feelers or smaller smelling antennae have dirt on them.

There is still some doubt about the visual powers of the lobster—as to just how well he can see. It is held by most authorities that the long feelers are of far greater value than the eyes, for whether quiescent or in motion these abnormally tactile organs are continually sweeping in all directions.

The smaller antennae located above and between the large feelers are chiefly olfactory—very acute smellers for locating enemies or food.



The Jaws of a Lion, Showing the Great Fangs Which Seize and Kill Prey and Behind Them the Teeth Which Cut Up the Meat Like Scissors.



A Shark Has Several Rows of Teeth, One Below the Other, Which Move Up from Underneath to Replace Wear and Tear and Losses